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ABSTRACT

The document summarizes the five-volume final report of a project which investigated sex education programs and evaluation methods in the United States. The project reviewed literature on both school and nonschool programs and identified important features and outcomes. The five volumes include: I, an overview of sex education in the United States: II, methods for evaluating programs: III, student, teacher, and principal questionnaires (presently being rewritten): IV, a bibliography of approximately 2,000 references to articles, books, and reports on sex education: and V, an annotated bibliography of exemplary curriculum materials. The major portion of this summary describes Volumes I and II. Topics include reasons for studying sex education, characteristics of school programs, program innovations or variations, prevalence and effect of school sex education programs, features and outcomes of programs, public support for sex education in the schools, nonschool sex education programs, state guidelines, and methods for evaluating programs. Conclusions of the study are that although many schools and organizations have developed sex education programs, there is little communication among them: sex education programs are very heterogenous: comprehensive programs must include far more than discussions of reproduction: and most Americans support sex education in the schools. (Author/KC)

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EXECUTIVE SUMMARY

Overview

This report reviews the literature on sex education programs, identifies the important features and outcomes of programs, selects and summarizes excellent school and non-school programs, reviews previous methods of evaluating programs, and develops new methods of evaluating programs. This work is designed to improve both the teaching of sex education and the evaluation of that instruction.

Throughout this contract, we defined sex education broadly. Thus, we examined both school and non-school programs, and even studied hot-lines and media events. In general, we included within our purview any program or activity primarily directed toward educating teenagers about sexuality. We excluded from consideration clinic or hospital programs which do not have significant education components, but which do distribute contraceptives and which might thereby provide some information about contraceptives.

This report provides evidence for several conclusions:

--Many schools and voluntary organizations have developed sex education programs, but there is little communication among them. Thus, there may be more sex education taking place than hitherto believed, and there is a need for more and better descriptions and evaluations of programs.

--Sex education programs are very heterogenous. Non-school programs in particular employ widely different techniques such as two day marathons, peer counseling, psychodrama, media spots, and hot-lines.

--Comprehensive programs must include far more than discussions of reproduction. They should cover other topics such as contraception, numerous sexual activities, the emotional and social aspects of sexual activity, values, and decisionmaking and communication skills. In addition to being concerned with the imparting of knowledge, they should also focus on the clarifying of values, the raising of self esteem, and the developing of personal and social skills. These tasks clearly require that sex education topics be covered in many courses in many grades.

--Most sex education programs that have been evaluated have a number of positive effects. First, they clearly increase students' knowledge about sexuality. Second, they tend to make students more tolerant of the sexual practices of others, but they do not change the students' personal values that guide their own behavior. Third, the programs appear to have little affect upon the amount of various types of sexual behavior such as petting and intercourse. Fourth, those courses which emphasize contraception <u>may</u> increase the use of effective contraception and decrease both the use of ineffective methods of contraception and intercourse without contraception. Fifth, programs which actually provide contraception or which provide a bridge to a specific clinic <u>may</u> dramatically reduce teenage pregnancy.

--Most of the evaluations of programs employ an experimental design that can produce valid data. Unfortunately, most of the studies fail to measure many potentially important behavioral outcomes of programs. They also fail to measure long-term effects, and all too frequently they use poorly designed instrumentation.

--Because many pregnant teenagers obtain abortions in other communities, and also because schools do not have valid data on the pregnancies of their students, it is difficult, if not impossible, to measure directly the effects of sex education programs upon pregnancy rates.

--Despite the claims of some opponents, most Americans support sex education in the schools.

Organization of the Report

The complete final report contains this Executive Summary and five separate volumes. As is customary, the Executive Summary simply summarizes the major findings in the other volumes. Volume I is primarily substantive. It provides an overview of sex education, the empirical evidence in the literature of the effects of programs, important features and outcomes of programs, descriptions of exemplary school and non-school programs, and an analysis of state guidelines. Volume II focuses upon methods of evaluating programs. Specifically, it describes previously used methods of evaluating programs, specific suggestions for improving those methods, recommendations for new types of evaluations, and questionnaires which measure all the important features and outcomes of programs. Volume III is basically a questionnaire kit. It contains the questionnaires with directions for administering them and aids for scoring them. Volume IV is a large bibliography containing approximately 2,000 references to articles, books, reports, etc. on sex education. Finally, Volume V is an annotated bibliography of exemplary curriculum materials (both print and non-print).

VOLUME I

Reasons for Studying Sex Education

There are three major reasons for studying sex education. First, there are many sex education programs throughout the country, and their effects are not known. According to the National Institute of Education, 37% of all high schools have a separate unit or class in sex education. Although this estimate may be misleadingly high, both schools and voluntary organizations are devoting a substantial effort to some form of sex education instruction. However, these organizations and others have devoted very little effort to evaluating that instruction. This void should be filled.

Second, many communities have erupted in conflict over sex education during the last decade. In some cases, teachers have been fired and school board members have been removed from office, primarily because of their views

on sex education. During these conflicts, people on both sides of the conflicts have made many unsupported claims about sex education. If careful evaluations of programs are completed, then some of these conflicts can be resolved.

Third, and perhaps most important, teenagers and adults experience a great many sex-related problems that sex education programs may possibly alleviate. Several examples will illustrate this. First, approximately 1.3 million 10- to 19-year old girls become pregnant each year and more than one-third of all girls become pregnant before their twentieth birthday. Most of these pregnancies lead to either abortions or a series of other negative outcomes including higher risk of death during delivery, disruption of school and employment, and greater risk of subsequent divorce and welfare dependency. Second, of the estimated 10 million people who were infected by all forms of venereal disease in 1978, about two-thirds were young people between the ages of 15 and 24. Third, the number of rapes keeps increasing, and the majority of rapes occurs among young people. Moreover, for adolescents, the majority of rapes occurs among acquaintances. This fact is particularly important because sex education may more easily reduce acquaintance rape than other kinds of rape. Fourth are the innumerable sex-related problems which are extremely important, but which lack reported frequencies. There are the specific dysfunctions (e.g., impotence, lack of orgasms, and premature ejaculations). There are also the many more subtle problems (e.g., poor communication, feelings of guilt and dissatisfaction, giving in to peer pressure, and poor decisionmaking). Many of these problems continue into adult life and add considerable stress to marriage.

These sex-related problems and others are important and evidence suggests that sex education programs may partially reduce them. If so, then it is important to know which programs are most successful, why those programs are successful, and more precisely, how successful are those programs.

Characteristics of School Programs

Goals

The goals of sex education are both numerous and varied. A sampling of them follows:

--to provide accurate information about sexuality
--to facilitate insights into personal sexual behavior
--to reduce fears and anxieties about personal sexual developments and feelings
--to encourage more informed, responsible, and successful decisionmaking
--to encourage students to question, explore, and assess their sexual attitudes
--to develop more tolerant attitudes toward the sexual behavior of others
--to facilitate communication about sexuality with parents and others
--to develop skills for the management of sexual problems
--to facilitate rewarding sexual expression
--to integrate sex into a balanced and purposeful pattern of living
--to create satisfying interpersonal relationships
--to reduce sex-related problems such as venereal disease and unwanted pregnancies

Most sex educators agree with most of these goals, but a few educators would differ with some of these and would add a few of their own. In particular, some educators would stress that a particular value system should be encouraged (that heterosexual activity within marriage is the only moral or acceptable type of sexual activity).

Elementary School

School sex education begins in elementary school. In most schools, this instruction is informal and unplanned. Nevertheless, the manner in which teachers handle sexual incidents (e.g., kissing, swearing, and looking at girls' underwear) affects the attitudes that the students develop toward discussing sexuality and toward their own sexuality. In some schools, children learn that certain sexual activities and discussing sexual activities are "naughty," while in other schools, the children learn a more positive approach.

In many elementary schools menstruation and the biological aspects of reproduction are discussed in the fifth or sixth grades, but most schools do not take this opportunity to discuss sexuality more generally.

Junior High School

In a few schools, teachers focus upon some of the changes, feelings, and problems which accompany puberty and adolescence. These schools discuss the differences in physical growth patterns, the changes that take place during adolescence, some of the details of reproduction, flirtation, necking, masturbation, venereal disease, and values clarification. When these topics are covered, they are typically covered in other classes (e.g., biology, health, or physical education). Moreover, it should be emphasized that most junior high schools do not cover these topics.

Senior High School

Educators have devoted much greater effort to developing sex education for high school students. Moreover, these educators represent a grass roots movement. That is, many different teachers or communities have developed their own materials and courses relatively independently.

Partly because of this independent development, high school sex education programs have an enormous diversity. They vary on a number of important dimensions:

Duration of Instruction Some programs last for only a single day or for only a few periods on successive days; others last for an entire year.

Number of Sessions A number of programs continue for a single full day, while most are divided into separate periods on different days.

Separate vs Integrated In many schools, instruction is divided among many different classes and students are encouraged to take all of them. Actually, in these programs, most students receive part of the instruction in one

course, but fail to take the other courses. In other schools, sex education is a separate elective unit or course for which parental notification or permission is frequently required.

Topics Covered Some courses cover only the bare essentials (e.g., anatomy, reproduction, and venereal disease). Other courses are far more comprehensive and cover such topics as variations in growth patterns; emotional and social aspects of dating, necking, petting, and sexual intercourse; sexuality as part of our total personality; advantages and disadvantages of premarital sexual activity; the probability of becoming pregnant; masturbation; homosexuality; rape; responsibilities of parenting; the characteristics of different types of contraception; the methods for obtaining contraception; values clarification; and decisionmaking, communication, and assertiveness skills.

Classroom Atmosphere In some programs, the teacher or other professionals simply lecture to the students. In other better and more comprehensive programs teachers develop a classroom atmosphere with trust, concern, and empathy. In these supportive atmospheres, students raise many questions and issues, and express both feelings and concerns. In some classrooms, particularly in parochial schools, sexuality is discussed within the context of religious values. In public schools, values and responsibility are stressed, but particular values are not emphasized, and the atmosphere is less judgmental.

Modal Types

Many of these dimensions are related to one another and produce three especially common combinations of traits or modal programs. The first is a "one shot" program in which teachers or outsiders present information on reproduction and possibly contraception during one or two class periods of approximately fifty minutes each. Although questions can be asked, most of the time the speaker lectures to the students.

The second modal type continues for one to two weeks. Typically it is part of another course (e.g., health) and it includes lectures, a few discussions, and a few films on several topics such as reproduction, venereal disease, and possibly contraception.

Finally, the third modal type is a more comprehensive sex education class. It may last an entire semester and is devoted to a wide variety of sexual matters. Thus, it typically contains cognitive, affective, and skill components. That is, factual material is presented; attitudes are shared and discussed; and decisionmaking and communication skills are developed. Many of the topics mentioned above are covered at least once. Although teachers provide lecture material, the emphasis is upon class discussions and the sharing of experiences and feelings. Commonly there is an effort to develop a supportive and non-judgmental atmosphere.

Program Innovations or Variations

Although there are innumerable exciting innovations in sex education, there are four that are particularly important.

Peer Counseling

The immediate goal of peer counseling programs is to train students both to provide accurate information and referral services to their peers and to listen with sensitivity and respect to problems of other students. Training for the counselors usually lasts twelve to sixteen weeks, with several hours per week devoted to didactic training, role-playing, and small group discussions. After the training, the peer counselors maintain a "Rap Room" with the help of a faculty advisor. In this room the students have access to literature and films on sexuality. In addition, it is a place where discussions on sexual matters are frequently held.

Parental Involvement

Some of the most successful programs emphasize parental involvement both in the initial planning of the program and in the continued development of the program. Often this involvement is most helpful when it is formalized in a committee which includes parents, other community members, and school personnel. The parents provide input from the community, raise questions of concern, and provide a buffer to opposition.

Programs for Parents

A few schools throughout the country have developed programs for parents of teenagers that complement the programs for the students. These are designed 1) to give the parents more accurate information about sexuality today, 2) to provide parents with information about the topics being covered in the students' classes, and 3) to improve communication between the teenagers and their parents. The success of these programs is not yet known, because few of them have been carefully described or evaluated.

Provision of Contraceptives

Several years ago there was only one school in the country, Woodson High School in Washington, D.C., which provided contraceptives to the students in the high school itself. However, a few other schools have now included the provision of contraceptives within their program.

There are of course several advantages to providing contraceptives in the school health clinic. It reduces the fear and inconvenience of going to a strange clinic in another part of town. It enables sexually active students to obtain contraception quickly. It also provides a link between the sex education instruction on contraception and the contraception itself.

Although numerous students used the clinic at Woodson, the number was initially less than might have been expected. One reason was the lack of anonymity; when students went to the clinic, their friends sometimes saw them. At Woodson and the other high schools now offering contraception, the program is being restructured to overcome this problem.

Prevalence of School Sex Education

In 1974, the National Education Association sampled 800 public school systems and found that only ten percent fully provided sex education. Four years later the National Institute of Education conducted an excellent survey of high schools and estimated that about 37% of the schools have a separate unit or course in sex education.

If this estimate is correct, and if one fourth of the students in those high schools with separate units or courses actually take those units or courses, then less than ten percent of all students receive such instruction. This figure strongly suggests that sex education programs can be greatly expanded.

Effects of School Sex Education Programs

Advocates of sex education have established for themselves a truly formidable set of goals. These include changing students' knowledge, attitudes, self perceptions, skills, fears, and social and sexual behaviors. Because these are the established goals, sex education programs should be evaluated according to the extent to which they meet these goals. However, for two reasons sex education courses should not be unduly criticized if they fail to meet these goals. First, as just noted, these criteria are unusually demanding. Second, other courses in schools are not evaluated by such demanding goals. For example, civics classes are not evaluated by their ability to make better citizens out of students, even though this may be an implied or explicit goal of the courses.

Given the capabilities and limitations of schools in general, the effects of sex education are not surprising. There are five major conclusions.

First, innumerable studies of all kinds of programs strongly indicate that sex education courses can substantially increase the knowledge of students about sexual matters. In this respect, sexual topics are not different from other topics if they are taught properly. This success should clearly be applauded, because our society generally approves of greater knowledge and generally assumes that greater knowledge facilitates improved decisionmaking. Moreover, numerous studies have indicated that one primary reason that teenagers become pregnant is their ignorance about the probability of becoming pregnant and about contraception.

Second, many, but not all, programs produce attitudinal change. More specifically, successful programs tend to increase the students' tolerance of the sexual practices of others. However, they do not appear to affect the students' personal values which guide their own behavior. That is, there is no evidence that sex education makes the students "immoral."

Third, sex education instruction appears to have little effect upon the amount of various types of sexual behavior such as petting or intercourse. However, this conclusion is only tentative, because it is based upon only a few studies of college classes. Moreover, there is weak evidence that

indicates that some sex education programs may improve the communication between the teenagers and their parents, and that, in turn, this improved communication may delay the first experience of intercourse and may facilitate the use of contraception when intercourse does occur.

Fourth, those courses which thoroughly cover contraception may increase the use of effective contraception and decrease both the use of ineffective contraception and unprotected intercourse. Once again, this conclusion is tentative because it is based upon the only study which examined contraceptive use.

Fifth, those programs which facilitate the ease of obtaining contraception may have a direct impact upon pregnancy rates. In St. Paul, Minnesota, a comprehensive health clinic on campus provides sex education as well as health exams, pelvic exams, and contraceptive follow-ups. It also provides a bridge to an off campus clinic that prescribes contraceptives. This program apparently reduced the high school fertility rate by 56%. This study is the only study which carefully measured the impact of a high school program upon pregnancy rates. However, its success coupled with the success of a few non-school sex education programs strongly suggest that a program which integrates instruction and the provision of contraception can be highly successful in reducing pregnancies.

Important Features and Outcomes of Programs

The review of the literature above describes some of the characteristics and effects of existing programs. However, the literature does not enumerate and rate the important features of ideal programs nor their important outcomes. In this contract we could not actually evaluate many programs and thereby determine directly their important features and outcomes. However, we did complete several steps to better understand these features and outcomes.

First, we identified two goals that encompass most other important goals. The first goal is the reduction of unwanted teenage pregnancy. This goal is clearly important, provides the rationale for this contract, and also provides the impetus for much activity nationwide. The second goal is the facilitation of a positive and fulfilling sexuality. This goal should not be confused with the facilitation of sexual activity. "Sexuality" as defined by professionals refers not only to sexual intercourse, but to a broad range of interactions among people. For some teenagers, a more positive sexuality may result from decreased sexual activity. Thus, this goal actually involves the improvement of interpersonal relationships and psychological health.

Second, we generated a long list of features and outcomes of programs that might contribute to these goals. We then asked adolescents who were experts by virtue of their age, and adults who were professionals in the field of sex education to supplement this list. This process was repeated until people perceived it as comprehensive.

Third, one hundred professionals in the field rated each feature and each outcome according to its importance in contributing to each of the goals. This sample of professionals is not a random sample, but the caliber of its members and the diversity of its members make it an important sample of opinion.

These ratings provide several conclusions. First, there is remarkable agreement among the experts, even though they are geographically, religiously, and professionally diverse. Second, the twin goals of reducing pregnancy and facilitating a positive and fulfilling sexuality are not only compatible, but mutually reinforcing. That is, the features and outcomes that were rated important for one goal were also rated important for the other goal, even though the ratings were conducted independently. Third, experts believe that focusing solely upon reproduction is definitely insufficient. They believe that courses should cover numerous sexual activities such as necking, petting, sexual intercourse, masturbation, and homosexuality. When discussing these topics, the courses should include the emotional and social aspects of premarital sexual activity. With near unanimity experts state that contraception, myths, values, peer pressure, sexual exploitation, methods of resisting sexual pressure, decisionmaking skills, and communication skills should also be discussed. Moreover, these topics should be covered in depth. For example, when covering contraception, the class should consider the advantages and disadvantages of different methods of birth control, the proper use of each method, and the specific procedures for obtaining contraception. With near unanimity the professionals believe that the discouragement of all premarital sexual activity is not important. Some even volunteered that such discouragement was counterproductive. Moreover, these discussions should occur in a non-judgmental, trusting and supportive atmosphere in which students share their feelings, beliefs, and experiences and are free to explore any topic they raise about human sexuality. Finally, the professionals indicated that important outcomes of programs include changes in the students' knowledge, clarity of values, acceptance of other people's sexual practices, self esteem, and decisionmaking, communication, and assertiveness skills.

This list of important characteristics of an ideal program is both long and demanding. This calls into question whether in fact any program can have most or all of these qualities. In a search for exemplary programs throughout the country, we found twenty programs that have most of the desired features and some of them appear to have the desired outcomes as well. Moreover, some of them thrive in locations that are generally hostile to sex education. Thus, they demonstrate that it is possible to create and maintain excellent programs with most of the desired features and outcomes.

The twenty programs are summarized in the report. One of them in St. Louis is described in greater detail.

Public Support for Sex Education in Schools

Despite the many newspaper headlines on sex education battles and despite the termination of a few sex education programs, most Americans apparently support sex education. Several studies support this claim. First, when parents are given the option of preventing their children from participating in a sex education class, less than 3% choose to do so. Second, in 1974 the National Option Research Center of the University of Chicago interviewed a random sample of 1,484 adult Americans. About 78% favored both sex education in schools and the provision of birth control information to teenagers who want it. Third, a 1977 Gallup poll indicated that 70% of Americans believe that contraception should be taught in school, nearly double the proportion

holding that belief in 1970. Fourth, a 1975 national study of school superintendents reported that only 5% of existing programs were eliminated following controversy, but that more than 50% were expanded following controversy.

Nonschool Sex Education Programs

Most attention to sex education has focused on schools. Until recently, reports of nonschool programs appeared most often in newsletters and journals reaching primarily the family planning clinic community. In the last few years, however, concern with teenage pregnancy has stimulated the emerging interest of many other groups in human sexuality education. Religious groups, youth organizations, local social service agencies, hospital centers, medical schools, and many others are directing educational programs for young people. In addition, a variety of professional organizations are training leaders and facilitators of sex education programs, and other organizations are establishing an increasing number of programs to provide sex education to parents as well as children.

To survey and better understand nonschool programs, we identified many important programs, created a scheme for categorizing these programs by sponsor, and then selected three to five specific programs for each sponsor. These programs are described in detail in the report and are summarized here.

Our analysis indicated that most programs belonged in one of the following eight groups:

1. Planned Parenthood affiliates
2. national youth organizations not affiliated with churches (e.g., Girls Clubs, YWCA, Boys Clubs)
3. local youth agencies (e.g., The Door)
4. religious organizations
5. adult organizations with a concern for youth (e.g., The Population Institute)
6. state and local government departments
7. programs for pregnant teenagers or teenage parents
8. hospital programs

A fundamental difference between school and nonschool programs is that the latter are not constrained by classroom structure (e.g., 50-minute hours), by the need to please all students and all parents, nor by legal guidelines that apply to schools. Thus, nonschool programs have much greater freedom and flexibility and these qualities in turn make them less structured and more diverse.

On the other hand, nonschool programs lack the various legal and social sanctions that keep teenagers in school. In order to stimulate the interest of young people and to design programs which meet youth needs, many nonschool programs include teenagers in the development and implementation of programs. For example, some nonschool programs train some teenagers as counselors for other adolescents and as teachers of adults who work with youth. To further maintain teenagers' interest, nonschool programs more commonly discuss topics that concern them and that evoke controversy in some school districts (e.g., values, feelings, premarital sex, and contraception).

Regardless of which topics are considered, nonschool programs are more likely than school programs to use innovative approaches such as small group discussions, both individual and group counseling, role playing, media materials, and hotlines.

For all nonschool sponsors, the most common program audience is a small group, although the Planned Parenthood affiliates, local youth agencies, teenage parent programs, and hospital programs are also likely to emphasize individuals. Participation in most of these programs is brief. For example, while some involve teenagers in a several month training as peer educators, their contact with the audience is likely to be one-shot or short-term. Only a few programs provide long-term experiences for the audience and most of these are in church-sponsored programs or programs for pregnant adolescents. Given these features, it is not surprising that the most common activities of these programs are small group discussions, counseling, and role playing exercises.

Most sponsors and most programs included teenagers in planning and implementation. Similarly nearly all of the programs are linked with other community agencies and services. However, only half of the programs involve parents. These are predominantly national youth organizations, religious groups, and state and local government departments.

The content of these programs tends to be more similar than different across sponsor types. Nearly all emphasize decisionmaking, communication, feelings, values, reproductive anatomy, dating relationships, venereal disease, and contraception. Most of them also cover sex roles and various aspects of parenting, with programs for pregnant teenagers more likely to cover the latter. However, in the small groups and discussions of most of these programs, content is highly flexible. Sometimes specific topics are covered, and other times they are not.

For their financial support, most of the programs depend on multiple sources of funding. Planned Parenthood affiliates, programs for pregnant teens, and hospital programs are particularly likely to receive federal funds, while religious groups and local youth agencies are most likely to depend on contributions. Private foundations contribute to nearly all sponsors, but are most likely to be major supporters of adult groups concerned with youth, local youth agencies, and national youth organizations.

Evaluations of the programs are based predominantly on simple observations and frequency counts of the number of people participating, the number of presentations made, etc. None of the studies reviewed carefully evaluate the impact of the program upon the participants.

State Guidelines for School Instruction

In recent years the sex education literature has largely ignored the legislative basis for sex education programs. Although a few studies have examined whether states mandate or support sex education, none of them has examined the guidelines in any detail. This lack is particularly pronounced because most states now have guidelines and some of them are quite detailed.

To study the state guidelines, we obtained copies from all states which have them. After completing a standardized summary of the guidelines of each state, we returned that summary to each state to assure that our interpretations were correct. If there were errors, they were resolved over the phone. Because our study obtained results that directly contradict those of the few previous studies, we telephoned all those states for which there were discrepancies and again made sure that our interpretations were correct.

According to our analysis, only Maryland and Kentucky require sex education and only Louisiana prohibits it. (Despite the clear prohibition in the guidelines, sex education is still taught within other courses in Louisiana.) In general, guidelines tend to support sex education, but this support is rather weak. Surprisingly, the amount of support does not vary significantly from one region of the country to the next. The amount of support is, however, strongly related to the proportion of the state's high schools that have separate courses in sex education. Although this suggests that state guidelines may have a considerable impact upon school programs, the direction of causality cannot be ascertained from the data.

Although the guidelines vary, most of them strongly support local autonomy, the involvement of parents in the planning of the programs, the public review of materials, periodic evaluations, special teacher training, and the integration of sex education topics into different courses and grades. Some states encourage, while others discourage separate courses in sex education. They tend to ignore controversial topics by neither encouraging nor discouraging their inclusion in instruction.

VOLUME II

Methods Used to Evaluate School Programs

By far the most common method of analyzing the effects of sex education programs utilizes the experimental design. The sex education class is considered the experimental group and some other class or group of students is considered the control group. Appropriately, the "treatment" consists of all the activities of the sex education class. Typically, pretests are administered during the first few days of class and posttests are given during the last few days of class. Of the numerous studies examined for this review, the vast majority employed such a design.

The studies using this design have two major strengths. First, by comparing the change in scores of the control group and the experimental group, various types of errors can be eliminated or controlled. For example, if a control group were not used, then it would be difficult, if not impossible, to determine whether the changes that occurred in the experimental group were produced by the course or by natural maturation processes. Second, an experimental design can be used naturally in the classroom setting. That is, when students take a pretest, complete the course, and then take the posttest, this resembles their normal routine and appears natural. This is in contrast to some laboratory experiments which test psychological principles, but which also appear artificial to the participants.

However, these experimental studies contain several weaknesses which limit the validity of their conclusions. First, most of the studies evaluate single programs which have not been randomly selected. Thus, it may be inappropriate to generalize to other sex education programs. For example, some courses may be successful because of unusually charismatic teachers. Second, in most of the studies, evaluators are rarely able to assign students randomly to the experimental and control groups. This problem is accentuated by the fact that students who take sex education classes are probably different from those who do not. Because of other curriculum requirements, college-oriented students may be less likely to take sex education classes. Sex education students may also have different values and behaviors and may be more or less receptive to changing their attitudes and behaviors. Third, very few of the studies measure the long-term effects of the course. Although some effects of the course may not become apparent until the students engage in sexual activity months or years later, other effects may become attenuated by the passage of time. Fourth, the questionnaires or measuring instruments are typically poorly designed. On the one hand, they exclude questions about some of the most important outcomes of programs. On the other hand, they often measure poorly those outcomes which they attempt to measure. For example, few of them are carefully pretested, and few report reliability and validity coefficients. Finally, many of the studies report the statistical significance of the findings, but few of them provide good indicators for the magnitude of the change. For example, the mean score of a class on some outcome may increase from 7.8 to 8.1 and this may be statistically significant, but the importance of that change cannot be determined from the report.

In several local and national surveys of teenagers, scholars have measured both the respondents' participation in sex education programs and their sexual activities. Thus, by simply correlating these variables, these scholars could ideally measure the impact of sex education programs. Unfortunately, these studies cannot usefully serve this purpose for one major reason. They consistently fail to ask questions about the quality of the sex education program (e.g., its length, the topics covered, the enthusiasm, knowledge, and openness of the teacher, and the use of group discussions and role-playing). Although these surveys are most useful for other purposes, they have relatively little value in estimating the impact of sex education programs.

Feasible Methods for Evaluating Programs

When investigators evaluate the effects of programs, they must make decisions about three important features of the overall design: 1) whether it should be an experimental design or a survey; 2) what should be the unit of analysis (e.g., individual students, classes of students, schools, school districts, counties, or states); and 3) what should be the method of obtaining data (i.e., data directly from respondents or data from public statistics). Although these features can generate 56 different overall designs, some of these combinations are theoretically or practically impossible. In this summary only those combinations of features with particularly advantageous qualities will be discussed.

The single best design for evaluating a single sex education class or program is the experimental design commonly used and described in the section above. This approach can be easily and naturally used, and at some extra cost, long-term effects can be measured.

However, for two reasons, this approach does not facilitate generalizations about the effects of sex education. First, it is based upon a sample size of one, and that one case is not randomly chosen. Second, if that particular class or program is successful, it cannot be demonstrated which particular feature or combination of features made it successful. For example, a particularly charismatic teacher may have facilitated the success.

A survey of students who have taken and who have not taken sex education is probably the best inexpensive method of determining the impact of sex education in a larger population. However, for this method to be at all effective, the survey must include many questions about the quality of the sex education program. Surveys have several distinct advantages. First, they are relatively inexpensive. Second, they can question large numbers of teenagers. Third, they have substantial sampling flexibility. (It is possible to sample students from a single school or from the entire nation.) Fourth, in a single administration of the questionnaire, it is possible to include people who have taken different sex education courses and who have taken them at different times. All of these advantages enhance generalizability.

On the other hand, surveys obviously have a major disadvantage: namely, they cannot control confounding variables nor demonstrate the direction of causality.

The advantages of both the experimental designs and the surveys can be combined in a more complex approach which incorporates a survey of many different courses each of which in turn is evaluated using an experimental design. That is, the features and the effects of many different sex education courses are carefully measured using an experimental design and questionnaires. Then all the information from all the courses are brought together and analyzed using survey statistics. This combination of survey and experimental methods facilitates the assessment of which features of programs are most effective. It also facilitates generalizability.

The major disadvantages of this approach are its needs and its costs. Obviously, it requires considerable cooperation of many different programs. It is also rather expensive.

A totally different approach involves using public statistics on pregnancy rates. Where this approach works, it is ideal for several reasons. It directly measures a major goal of programs (i.e., the reduction of teenage pregnancies). Data may be obtained for the entire population of interest, not just a sample. Finally, data may be collected over time, thereby enabling longitudinal analysis.

However, there are several factors which prevent the accurate collection of such data. First, the vast majority of schools throughout the country do not and cannot collect valid data on the pregnancies of their students,

because many of the teenage students obtain abortions anonymously. Second, to assure anonymity, many pregnant teenagers obtain abortions in clinics in other communities some distance from their schools. Thus, it is difficult or impossible to assess the pregnancy rates for any student body by obtaining information from nearby abortion and pregnancy clinics. Third, women can now administer to themselves pregnancy tests and do not have to go to clinics for pregnancy tests. In some areas, the reduction of public funds for abortions may cause teenagers to obtain cheaper abortions at illegal non-accredited clinics which will refuse to provide abortion data. In sum, it is very difficult or impossible to obtain accurate pregnancy data for most schools or school districts.

On the other hand, in some areas it is both possible and lucrative. In Eureka, California, the geography causes nearly all teenagers to attend four different pregnancy clinics if they believe they are pregnant. Moreover, all of these clinics ask each teenager to complete a short questionnaire which specifies the school attended by that teenager. Thus, it is possible to estimate the pregnancy rates of each school, to compare the rates of schools with and without programs, and to compare rates as schools develop programs. This approach should clearly be tried wherever it is feasible.

Questionnaires for Measuring Important Features and Outcomes of Program

There are several methods of obtaining data about the features and outcomes of sex education programs: directly observing behavior in the classroom or other settings, monitoring behavior or responses in laboratories, monitoring unobtrusive measures of behavior (e.g., condom sales in local drug stores), verbally interviewing the students, and administering written questionnaires. Although all these methods should be tried in different situations, only written questionnaires have a number of traits that especially recommend their use. Only they can reliably and validly measure all the features and outcomes that the experts rated as important. Moreover, they can be used in different communities, in both experiments and surveys, in studies of both classes and entire programs, and in studies of both small and large samples. In comparison with other methods, they can do all of this rather cheaply and efficiently. If properly used, they can maintain the anonymity of the respondents.

Their major weakness is their reliance upon respondents' reports of behavior. Response biases, fatigue, etc. may reduce the accuracy of responses. Moreover, the respondents may intentionally provide incorrect or inaccurate information. Fortunately, some of these problems can be minimized by properly constructed questionnaires.

Because of the importance of questionnaires in the measurement of important features and outcomes of programs, a major part of our effort focused upon the development of reliable, valid, and comprehensive questionnaires. To produce these questionnaires we completed several steps.

First, we carefully reviewed most existing questionnaires. The majority of them were not designed for teenagers and included language that was too difficult or they did not measure the features and outcomes specified as important by the experts.

Second, we generated several questions for each of the specified features and outcomes.

Third, we gave the questionnaires to teenagers and then discussed each question with them. We made sure that their understanding paralleled ours and that they could answer all the questions. Their recommendations produced many changes.

Fourth, we gave the questionnaires to experts in teenage sexuality and questionnaire design and incorporated their recommendations.

Finally, we gave the questionnaires to many teachers who in turn administered them to their students. We then analyzed the results statistically. Specifically, we removed items which had undesired distributions of responses, which were correlated with the Marlowe-Crowne Social-Desirability Scale, or which failed to load highly on the desired factors in the factor analysis of the psychological items.

As a result of these steps, we believe that the questionnaires are reliable and valid, but nevertheless, they are still in their developmental stage and their reliability and validity should be further verified.

The final questionnaires do measure all the important features and outcomes of programs. Because there are so many features and outcomes, the questions are distributed among six different questionnaires, some of which are sub-divided into multiple measures (e.g., the Psychological Inventory has 27 measures). The first three questionnaires measure features of programs and are designed for the students, teacher, and principal. The last three questionnaires measure the knowledge, the psychological attributes, and the behaviors of the students. All the questionnaires are summarized in the following table.

The Contents of the Questionnaires

I. Questionnaires for Measuring the Features of Programs

1. Class Evaluation (For Students)
   -- teacher characteristics
   -- class characteristics
   -- personal characteristics

2. Class Evaluation (For Teachers)
   -- program characteristics
   -- class characteristics
   -- coverage of topics and activities
   -- teacher characteristics

3. Class Evaluation (For Principals)
   -- program characteristics
   -- teacher characteristics

II. Questionnaires for Measuring the Outcomes of Programs

1. Knowledge Test (For Students)
   -- physical development and human reproduction
   -- social and sexual aspects of adolescence
   -- sexual activity
   -- birth control
   -- probability of becoming pregnant
   -- adolescent marriage and parenthood
   -- venereal disease

2. Psychological Inventory (For Students)

   Part 1: Understanding of Self
   -- goals
   -- sexual response

   Part 2: Values
   -- personal responsibility
   -- body variations
   -- sex roles
   -- sexual guilt
   -- sexual pressure
   -- birth control
   -- alternatives to intercourse
   -- sexual life styles

   Part 3: Self-esteem
   -- general self-esteem
   -- social self-esteem

   Part 4: Interaction Skills
   -- decisionmaking
   -- general communication
   -- communication of sexual needs
   -- discussion of sex
   -- sexual assertiveness
   -- birth control assertiveness
   -- caring

   Part 5: Fear or Comfort with Sex Related Activities
   -- heterosexual interaction
   -- sexual enjoyment
   -- sexual experimentation
   -- discussion of sexual problems
   -- use of birth control
   -- VD treatment
   -- gynecological exams
   -- body functions

3. Social and Sexual Behavior Inventory (For Students)

-- nonsexual social activities
-- discussion of sexual matters
-- sexual activities
-- use of contraceptives
-- probability of becoming pregnant

The Social and Sexual Behavior Inventory includes many questions about the care with which the respondent uses contraception. The questions can be combined to provide an overall estimate of contraceptive effectiveness. This measure in turn can be combined with the frequencies with which each method is used and can then provide a far more accurate estimate of the probability of each respondent becoming pregnant given their particular sexual and contraceptive patterns. These measures are particularly important because it diminishes the need to collect accurate data on pregnancy rates over time. That is, these measures can provide cheaper and more immediate feedback on the effects of programs.

In Volume III are suggestions for administering the questionnaires and detailed instructions for estimating contraceptive effectiveness and the probability of pregnancy. That volume also provides overlays that greatly facilitate the scoring of the knowledge tests and psychological inventory.

Conclusions

In sum, we have reviewed the literature and found that some programs affect both knowledge and attitudes and may also reduce teenage pregnancy and facilitate a more positive and fulfilling sexuality. However, these studies failed to delineate which particular features and outcomes are most important and effective. Consequently we employed a modified Delphi method to obtain ratings for them. Moreover, the evidence for the success of programs is not strong. Consequently we developed methods and questionnaires for better measuring the features and outcomes of programs and for empirically determining their importance.